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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/500,819	07/07/2004	Ryuji Shiozaki	Y31-170800C/KK	8667

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EXAMINER	
CHUO, TONY SHENG HSIANG	
ART UNIT	PAPER NUMBER
1795	

MAIL DATE	DELIVERY MODE
05/15/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/500,819	SHIOZAKI ET AL.	
	Examiner	Art Unit	
	Tony Chuo	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 February 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *7-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *7-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *12/8/08*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Claims 7-28 are currently pending. Claims 1-6 are cancelled. New claims 25-28 have been added. Applicant's arguments, see Remarks, filed 2/23/09, with respect to the rejection(s) of claim(s) 7-24 under 35 USC 102 have been fully considered and are persuasive. Therefore, the rejections have been withdrawn. However, upon further consideration, new ground(s) of rejection are made in view of Sunagawa et al. In addition, the indicated allowability of claims 13, 14, 19, 20, 23, and 24 is withdrawn in view of the newly discovered reference(s) to Sunagawa et al. Rejections based on the newly cited reference(s) follow.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on 12/8/08 was filed after the mailing date of the Non-Final Rejection on 10/23/08. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Claim Rejections - 35 USC § 102/103

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –

> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 7-10, 25, 27, and 28 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Sunagawa et al (US 6040090).

The Sunagawa reference discloses a non-aqueous electrolyte battery having a negative electrode, a non-aqueous electrolyte, and a positive electrode containing a positive electrode material comprising a compound represented by $Li_aCo_bMn_c(M)_dNi_{1-(b+c+d)}O_2$ wherein $0<a<1.2$, $0.1\leq b<1$, $0.05\leq c<1$, $0\leq d<1$, and $0.15\leq b+c+d<1$, wherein an example of the compound is $LiMn_{0.05}Ni_{0.05}Co_{0.9}O_2$ (See Table 5, example 39 and claim 13).

Examiner's note: It is inherent that a positive electrode material comprising $LiMn_{0.05}Ni_{0.05}Co_{0.9}O_2$ consists essentially of a single phase structure belonging to space group R3-m as a result of examination by x-ray diffractometry.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 11-14 and 19-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakanishi et al (US 2002/0061443) in view of Sunagawa et al (US 6040090).

The Nakanishi reference discloses a non-aqueous electrolyte battery having a negative electrode, a non-aqueous electrolyte, and a positive electrode containing a positive active material comprising a mixture of a lithium-nickel-manganese-cobalt composite oxide represented by $LiMn_yNi_{(1-x-y)}Co_xO_2$ wherein $0.5<x+y<1.0$ and $0.1<y<0.6$ and a lithium manganate represented by the formula $Li_{(1+z)}Mn_2O_4$ wherein $0\leq z\leq 0.2$ (See paragraph [0020]). It also discloses a mixing ratio of lithium nickel cobalt manganese composite oxide ($LiMn_yNi_{(1-x-y)}Co_xO_2$) to lithium manganate ($Li_{(1+z)}Mn_2O_4$) that is 90:10 (See Table 2, Invention cell 18).

However, Nakanishi et al does not expressly teach a lithium-nickel-manganese-cobalt composite oxide having an α-$NaFeO_2$ layer structure and represented by the general formula $Li_aMn_bNi_cCo_dO_e$, wherein $0.6\leq d<1$ or $0.8\leq d<1$ or $0.9\leq d<1$, wherein the composite oxide comprises a single phase structure belonging to space group R3-m. The Sunagawa reference discloses a positive electrode containing a positive electrode material comprising a compound represented by $Li_aCo_bMn_c(M)_dNi_{1-(b+c+d)}O_2$ wherein $0<a<1.2$, $0.1\leq b<1$, $0.05\leq c<1$, $0\leq d<1$, and $0.15\leq b+c+d<1$, wherein an example of the compound is $LiMn_{0.05}Ni_{0.05}Co_{0.9}O_2$ (See Table 5, example 39 and claim 13). Examiner's note: It is inherent that a positive electrode material comprising $LiMn_{0.05}Ni_{0.05}Co_{0.9}O_2$

has an α-$NaFeO_2$ layer structure and comprises a single phase structure belonging to space group R3-m as a result of examination by x-ray diffractometry.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Nakanishi positive active material to include a lithium composite oxide compound such as $LiMn_{0.05}Ni_{0.05}Co_{0.9}O_2$ that inherently comprises a single phase structure belonging to space group R3-m as a result of examination by x-ray diffractometry in order to utilize a lithium composite oxide compound that provides a battery with smaller discharge capacity decrease after storage and accomplishes much greater improvement in the capacity residual rate (See column 19, lines 46-51).

8. Claims 15-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sunagawa et al (US 6040090).

The Sunagawa reference discloses a non-aqueous electrolyte battery having a negative electrode, a non-aqueous electrolyte, and a positive electrode containing a positive electrode material comprising a compound represented by $Li_aCo_bMn_c(M)_dNi_{1-(b+c+d)}O_2$ wherein $0<a<1.2$, $0.1\leq b<1$, $0.05\leq c<1$, $0\leq d<1$, and $0.15\leq b+c+d<1$, wherein an example of the compound is $LiMn_{0.05}Ni_{0.05}Co_{0.9}O_2$, wherein "b" corresponds to "d" of the present application (See Table 5, example 39 and claim 13). Examiner's note: It is inherent that a positive electrode material comprising $LiMn_{0.05}Ni_{0.05}Co_{0.9}O_2$ shows a single phase structure belonging to space group R3-m as a result of examination by x-ray diffractometry.

However, Sunagawa et al does not expressly teach $0.6\leq d\leq 0.833$ or $0.8\leq d\leq 0.833$.

However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Sunagawa positive electrode material to include a lithium-nickel-manganese-cobalt composite oxide represented by the general formula $Li_aMn_bNi_cCo_dO_e$, wherein $0.6 \leq d \leq 0.833$ or $0.8 \leq d \leq 0.833$ because even if the range of prior art and the claimed range do not overlap, obviousness may still exists if the ranges are close enough that one would not expect a difference in properties (*In re Woodruff* 16 USPQ 2d 1934 (Fed. Cir. 1990)).

9. Claims 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sunagawa et al (US 6040090). The Sunagawa reference is applied to claim 7 for reasons stated above.

However, Sunagawa et al does not expressly teach $0<c-b \leq 0.05$.

However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Sunagawa positive electrode material to include a lithium-nickel-manganese-cobalt composite oxide represented by the general formula $Li_aMn_bNi_cCo_dO_e$, wherein $0<c-b \leq 0.05$ because even if the range of prior art and the claimed range do not overlap, obviousness may still exists if the ranges are close enough that one would not expect a difference in properties (*In re Woodruff* 16 USPQ 2d 1934 (Fed. Cir. 1990)). In addition, there is no evidence of the criticality of the molar ratios of manganese and nickel.

10. Claims 27 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sunagawa et al (US 6040090). The Sunagawa reference is applied to claim 7 for reasons stated above.

However, Sunagawa et al does not expressly teach a composite oxide that consists essentially of a single-phase structure belonging to space group R3-m or diffraction lines observed by x-ray diffractometry for the composite oxide that are limited to lines attributable to a single-phase structure belonging to space group R3-m.

However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Sunagawa positive electrode material to include a composite oxide that consists essentially of a single-phase structure belonging to space group R3-m or diffraction lines observed by x-ray diffractometry for the composite oxide that are limited to lines attributable to a single-phase structure belonging to space group R3-m because products which differ from prior art only in purity is obvious except when the pure product possesses unexpected properties not possessed by the impure one (*Ex parte Gray* 10 USPQ 2d 1922, 1925 (BPAI 1989)). Examiner's note: It is contended by the examiner that any diffraction lines observed by x-ray diffractometry, other than the lines attributable to the single phase structure, are attributable to impurities.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tony Chuo whose telephone number is (571)272-0717. The examiner can normally be reached on M-F, 9:00AM to 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for

the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TC

/Jonathan Crepeau/
Primary Examiner, Art Unit 1795